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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/766,827	01/30/2004	Bily Wang	BHT-3244-28	3857

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EXAMINER	
MAKIYA, DAVID J	

ART UNIT	PAPER NUMBER
2875	

DATE MAILED: 08/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Office Action Summary	Application No.	Applicant(s)	
	10/766,827	WANG ET AL.	
	Examiner	Art Unit	
	David J. Makiya	2875	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-18 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-18 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 30 January 2004 is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

The abstract of the disclosure is objected to because the word "chap" on lines 2 and 7 and the word "form" on line 6 should be corrected. See MPEP § 608.01(b).

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: the oblique ring face 41a for Figure 1 as described on Page 1, Line 19. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an

> international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Martin et al. (US Pub. No. US 2003/0227774).

With respect to claim 1, Martin et al. teaches an LED chip lamp apparatus 200, comprising a heat sink 211 with a reflector 212, an LED lamp module 210, assembled in an inside of a reflector for reflecting light of the LED lamp module, and a heat pipe 209, having two ends, one end thereof connecting to the LED lamp and the other end thereof connecting to the heat sink for transmitting heat of the LED lamp module (Paragraph 53).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 2-7, 9-13, and 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin et al. in view of Ansari et al. (US Patent 6,609,816).

With respect to claim 2, Martin et al. teaches the invention disclosed above in addition to having the LED lamp module positioned in a center portion inside the open end and extendedly retained in a receiving portion 208. However, it fails to teach the heat sink having a semi-elliptic shaped open end formed inside of one end of two ends thereof and a receiving portion shrinkingly formed inside of another end. Ansari et al. teaches an LED lamp module 10 with a heat sink 20 with a semi-elliptic shaped open end formed inside of one end of two ends thereof

and a receiving portion shrinkingly formed inside of another end (Figure 3). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Martin et al. with the teachings of Ansari et al. because changing the shape of the heat sink increases the surface area that allows for a greater heat transfer from the source to the surrounding environment.

With respect to claim 3, Martin et al. further teaches the LED chip lamp apparatus wherein the heat sink has a through hole (Paragraph 55) communicated with the receiving portion, one end of the heat pipe extending through the through hole to connect the LED lamp module, and another end of the heat pipe connecting to the heat sink (Figure 2C).

With respect to claim 4, Martin et al. teaches the invention disclosed above including one end of the heat pipe connecting to the heat conductor. However it fails to teach the heat sink consisting of a reflector housing and a heat conductor surrounding the reflector housing. Ansari et al. further teaches the LED chip lamp apparatus wherein the heat sink comprises a reflector housing 32 and a heat conductor 20 surrounding an outside of the reflector housing. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Martin et al. with Ansari et al. because having the conductor close to the housing will increase conduction of heat through the heat sink.

With respect to claim 5, Martin et al. teaches the LED chip lamp apparatus wherein the heat conductor has a concavity (not numbered) in a sidewall thereof for receiving the one end of the heat pipe (Figure 2C).

With respect to claim 6, Martin et al. further teaches the LED chip lamp apparatus wherein the LED lamp module comprises a heat conduction carrier 208 having a front end and a rear end, the rear end assembled in an inside of the reflector and connected to one end of the heat

pipe, a circuit substrate 206 positioned in the front end of the heat conduction carrier, and a plurality of the LED chips 210 in electrical contact on the circuit substrate.

With respect to claim 7, Martin et al. further teaches the LED chip lamp apparatus wherein the front end of the heat conduction carrier (not numbered) is a frustum of a pyramid (Figure 3A).

With respect to claim 9, Martin et al. further teaches the LED chip lamp apparatus wherein the circuit substrate 1306 comprises a hexagonal board and six trapezoidal boards respectively connected to six sides of the hexagonal board and covers the front end of the heat conduction carrier (Figure 13).

With respect to claim 10, Martin et al. further teaches the LED chip lamp apparatus wherein the circuit substrate comprises a rectangular board 1806 and four trapezoidal boards (not numbered) respectively connected to four sides of the rectangular board and covers the front end of the heat conduction carrier (Paragraph 74).

With respect to claim 11, Martin et al. further teaches the LED chip lamp apparatus wherein the circuit substrate comprises a plurality of the trapezoidal boards connected in a series and covers the front end of the heat conduction carrier (Figure 18).

With respect to claim 12, Martin et al. further teaches the LED chip lamp apparatus wherein the heat conduction carrier has a cavity (not numbered), one end of the heat pipe 209 being retained in the cavity (Figure 2C).

With respect to claim 13, Martin et al. further teaches an LED chip lamp apparatus consisting of a reflector 212 housing having two ends, one end of the reflector housing being formed as an open end having a semi-ellipsoid shape, and another end having a receiving portion

shrinkingly formed inside, a heat conductor positioned outside the reflector housing, a heat conduction carrier having a front end and a rear end, the rear end extending to the receiving portion and being retaining in the receiving portion, the front end positioned inside the open end, a heat pipe having two ends, one end connecting to the heat conduction carrier, and another end being bent 209 (Paragraph 53) and extendedly connecting to the heat conductor, a circuit substrate positioned on the front end of the heat conduction carrier, and a plurality of LED chips mounted on the circuit substrate. However, Martin et al. does not teach the heat conductor being positioned outside and surrounding the reflector housing. Ansari et al. further teaches the LED chip lamp apparatus wherein the heat sink comprises a reflector housing 32 and a heat conductor 20 surrounding an outside of the reflector housing. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Martin et al. with the teachings of Ansari et al. because having the conductor close to the housing will increase conduction of heat through the heat sink.

With respect to claim 15, Martin et al. further teaches the LED chip lamp apparatus wherein the circuit substrate comprises a hexagonal board and six trapezoidal boards respectively connected to six sides of the hexagonal board and covers the front end of the heat conduction carrier.

With respect to claim 16, Martin et al. further teaches the LED chip lamp apparatus wherein the circuit substrate comprises a rectangular board and four trapezoidal boards respectively connected to four sides of the rectangular board and covers the front end of the heat conduction carrier

With respect to claim 17, Martin et al. further teaches the LED chip lamp apparatus wherein the circuit substrate comprises a plurality of the trapezoidal boards connected in a series and covers the front end of the heat conduction carrier.

With respect to claim 18, Martin et al. further teaches the LED chip lamp apparatus wherein the heat conduction carrier has a cavity, and one end of the heat pipe is retained in the cavity.

Claims 8 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin et al. in view of Ansari et al. as applied to claims 2-7 and 9-13 above, and further in view of English et al. (US Pub. No. US 2003/0064376).

With respect to claims 8 and 14, Martin et al. teaches the invention disclosed above, however, it fails to teach the circuit substrate such that it can be unfolded. English et al. teaches an LED chip lamp apparatus 10 whose substrate 120 can be folded and unfolded. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Martin et al. with the teachings of English et al. by making the circuit substrate from an unfolded frustum of a pyramid because using a thin, foldable material for the substrate allows for higher thermal conductivity for transferring heat.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David J. Makiya whose telephone number is (571) 272-2273. The examiner can normally be reached on Monday-Friday 7:30am - 4:00pm (ET).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Renee Luebke can be reached on (571) 272-2009. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DJM
7/28/2005

RENEE LUEBKE
PRIMARY EXAMINER